

# OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **COBBETTS POND** the program coordinators recommend the following actions. *Thank you for increasing your sampling program this season to include a second sampling date. While this will help to better define lake quality trends we would still suggest increasing the sampling to include a third date. Since weather patterns and watershed activities change throughout the summer it is a good idea to conduct as many sampling events as possible. This will ensure a more complete understanding of the watershed and lake quality trends.*

## **FIGURE INTERPRETATION** **Station 1**

- Figure 1: These graphs illustrate concentrations of chlorophyll-a in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The historical data (the bottom graph) show a *worsening* in-lake chlorophyll-a trend, meaning concentrations are increasing. There was an improvement in chlorophyll-a concentrations this season, and this is a positive sign considering the amount of rainfall we experienced. The August chlorophyll-a sample was collected from 13 meters, which may have diluted the sample. In the future, make sure to sample from 7-meters (mid-metalimnion) to the surface. In the past, chlorophyll-a concentrations have been highly variable, but have remained below the state mean since monitors began collecting samples for VLAP in 1988. While algae are present in all lakes, an excess amount of any type is not welcomed. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.
- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs on this page show historical and current year data. The lower graph shows a *worsening* trend in lake transparency. The clarity of the lake increased this season as a result of the decrease in chlorophyll-a

concentrations. Mean clarity was at the New Hampshire mean reference line. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than last year's readings. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity.

- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is the limiting nutrient for plants and algae in New Hampshire waters. Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show a *fairly stable, but slightly increasing*, trend for epilimnetic phosphorus levels and a *worsening* trend for hypolimnetic concentrations, which means levels are increasing. The hypolimnetic phosphorus concentrations increased as the summer progressed, and therefore we recommend conducting a dissolved oxygen profile later in the summer to determine if an internal source of phosphorus could be present. This test was not performed this summer due to meter failure. The mean epilimnetic concentration was below the state median, while the hypolimnetic average was slightly above the state median. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

#### **OTHER COMMENTS**

- The blue-green alga *Oscillatoria* was the most dominant species in the plankton haul in June (Table 2). The presence of this species may explain the higher turbidity and total phosphorus in the metalimnion this summer, and also may have impacted the clarity readings. Blue-green algae can reach nuisance levels when sufficient nutrients and favorable environmental conditions are present. While overall algae abundance continues to be low in the lake, the presence of these indicator species should serve as a reminder of the lake's delicate balance. Continued care to protect the watershed by limiting or eliminating fertilizer use on lawns, keeping the lake shoreline natural, and properly maintaining septic systems and roads will keep algae populations in balance.
- The mean Acid Neutralizing Capacity (ANC) is in the best category for New Hampshire's lakes and ponds, not sensitive. This means that the pond can easily buffer acidic additions. Consult the Chemical Monitoring Parameters section of the report for more information.

- In-lake conductivity appears to be increasing over the years (Table 6). Conductivity increases often indicate the influence of human activities on surface waters. Septic system leachate, agricultural runoff, iron deposits, and road runoff can all influence conductivity. It would be useful to uncover the reasons for increased conductivity as we continue to monitor the lake. By increasing the number of samples collected during the summer we may be able to determine the source of many of these pollutants. We suggest monitors collect samples at several inlets during a rain event, or after spring snowmelt, to help in this determination. The VLAP Coordinator would like to meet with the volunteers of Cobbetts Pond to discuss sampling the watershed more diligently. Call (603) 271-2658 to schedule a meeting this spring.
- Connie's Brook had slightly higher total phosphorus concentrations in 2000 than in 1998 (Table 8), but it did not reach the high levels observed in 1997.
- **Please note** on one occasion this summer the total phosphorus levels in Dinsmore Brook and the Main Inlet were found to be less than 5 µg/L. The NHDES Laboratory Services adopted a new limit for reporting total phosphorus this year and the lowest value recorded is 'less than 5 µg/L'. We would like to remind the association that a reading of 5 µg/L is considered low for New Hampshire's waters.

#### **FIGURE INTERPRETATION**

##### **Station 2**

- Figure 1: Similar to Station 1, chlorophyll-a concentrations have decreased since last season. The blue-green algae species *Oscillatoria* was the dominant alga in both stations of the lake in June. The bottom graph shows a *fairly stable* trend in chlorophyll-a concentrations, and they remain well below the NH mean reference line.
- Figure 2: Transparency at Station 2 is *slightly worsening*. The clarity of the water improved this season most likely as a result of the decrease in the chlorophyll-a concentrations at this station.
- Figure 3: The phosphorus concentrations are *worsening* in both the upper and lower water layers of the lake, although concentrations decreased in the epilimnion from 1999. There was an increase in concentration in the hypolimnion (lower water layer) in August. This corresponds to the high turbidity observed at that time. Sediment may have been collected in the hypolimnion sample, which would increase the phosphorus level in the sample. Please check the Kemmerer bottle for bottom sediments before you fill the sample bottle.

**OTHER COMMENTS**

- In-lake conductivity appears to be increasing over the years (Table 6). See the Other Comments section for Station 1.
- Dissolved oxygen was low in the hypolimnion in June (Table 9). The process of decomposition in the sediments depletes dissolved oxygen on the bottom of thermally stratified lakes. As bacteria break down organic matter, they deplete oxygen in the water. When oxygen gets below 1 mg/L, phosphorus normally bound up in the sediment may be released into the water column, a process that is referred to as *internal loading*. Depleted oxygen in the hypolimnion usually occurs as the summer progresses. This explains the higher phosphorus in the hypolimnion (lower water layer) versus the epilimnion (upper layer). Since an internal source of phosphorus to the lake is present, limiting or eliminating external phosphorus sources in the lake's watershed is even more important for lake protection.
- Turbidity was high in the metalimnion and the hypolimnion in June and August (Table 11). As we stated in the Other Comments section of Station 1, the phytoplankton species observed may have affected turbidity values in the metalimnion, and the stirring of bottom sediments likely influenced the hypolimnion values by adding sediments to the sample.

**USEFUL RESOURCES**

*Stormwater Management and Erosion and Sediment Control Handbook*. NHDES, Rockingham County Conservation District, USDA Natural Resource Conservation Service, 1992. (603) 772-4385.

*Lake Eutrophication*, WD-BB-3, NHDES Fact Sheet, (603) 271-3503 or [www.state.nh.us](http://www.state.nh.us)

*Nonpoint Source Pollution and Stormwater Fact Sheet Package*. Terrene Institute. (703) 661-1582.

*The Blue Green Algae*. North American Lake Management Society, 1989. (608) 233-2836 or [www.nalms.org](http://www.nalms.org)

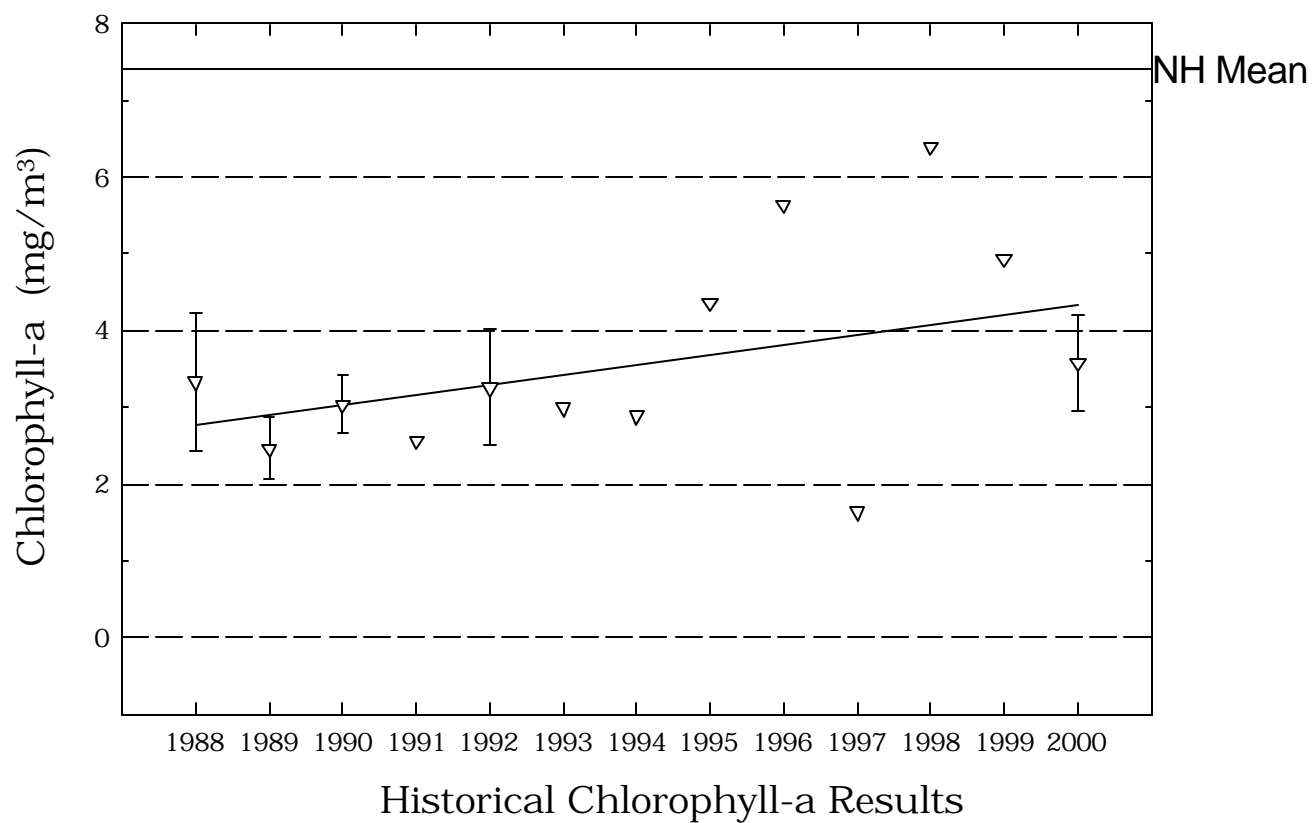
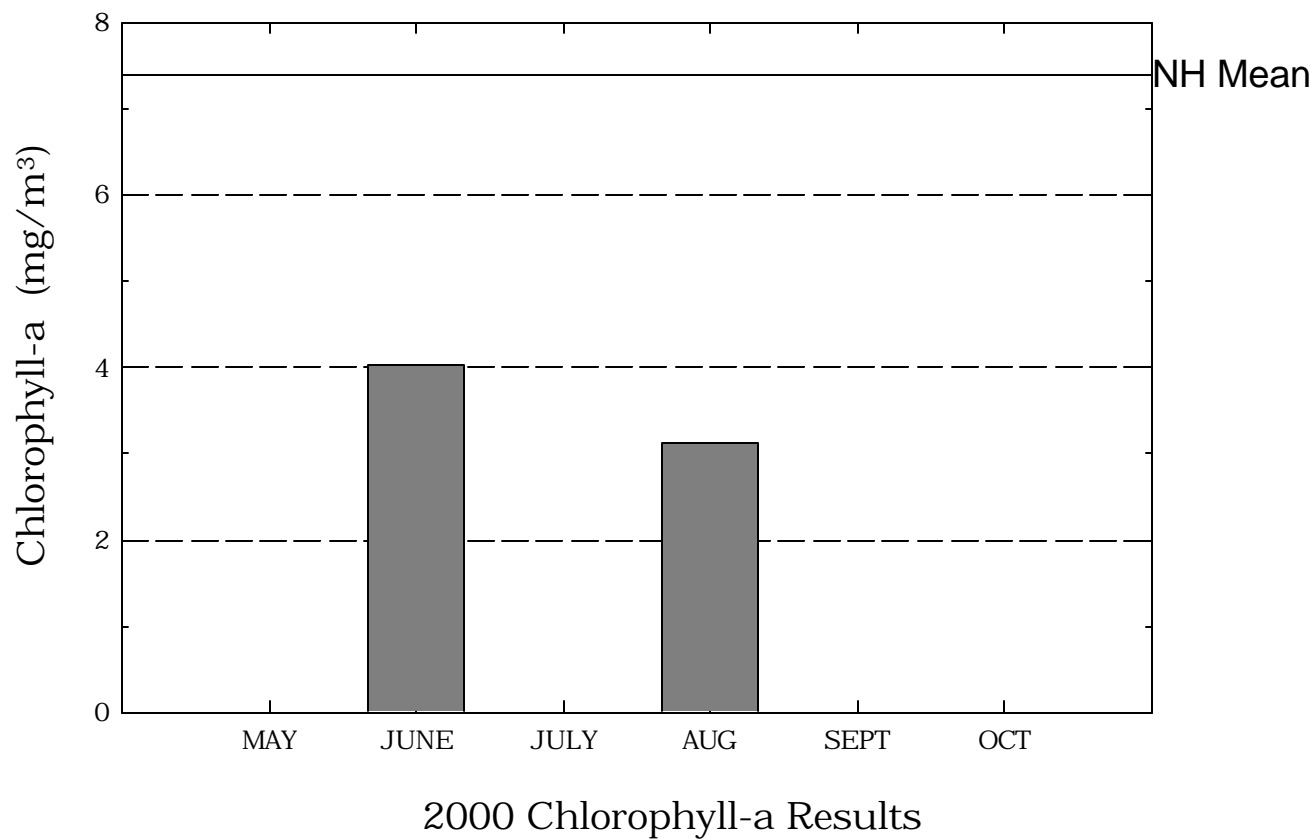
*A Boater's Guide to Cleaner Water*, NHDES pamphlet, (603) 271-3503 or [www.state.nh.us](http://www.state.nh.us)

*Native or Naturalized Shoreland Plantings for New Hampshire*. NHDES Shoreland Protection Program. (603) 271-3503

*Answers to Common Lake Questions*, NHDES-WSPCD-92-12, NHDES Booklet, (603) 271-3503.

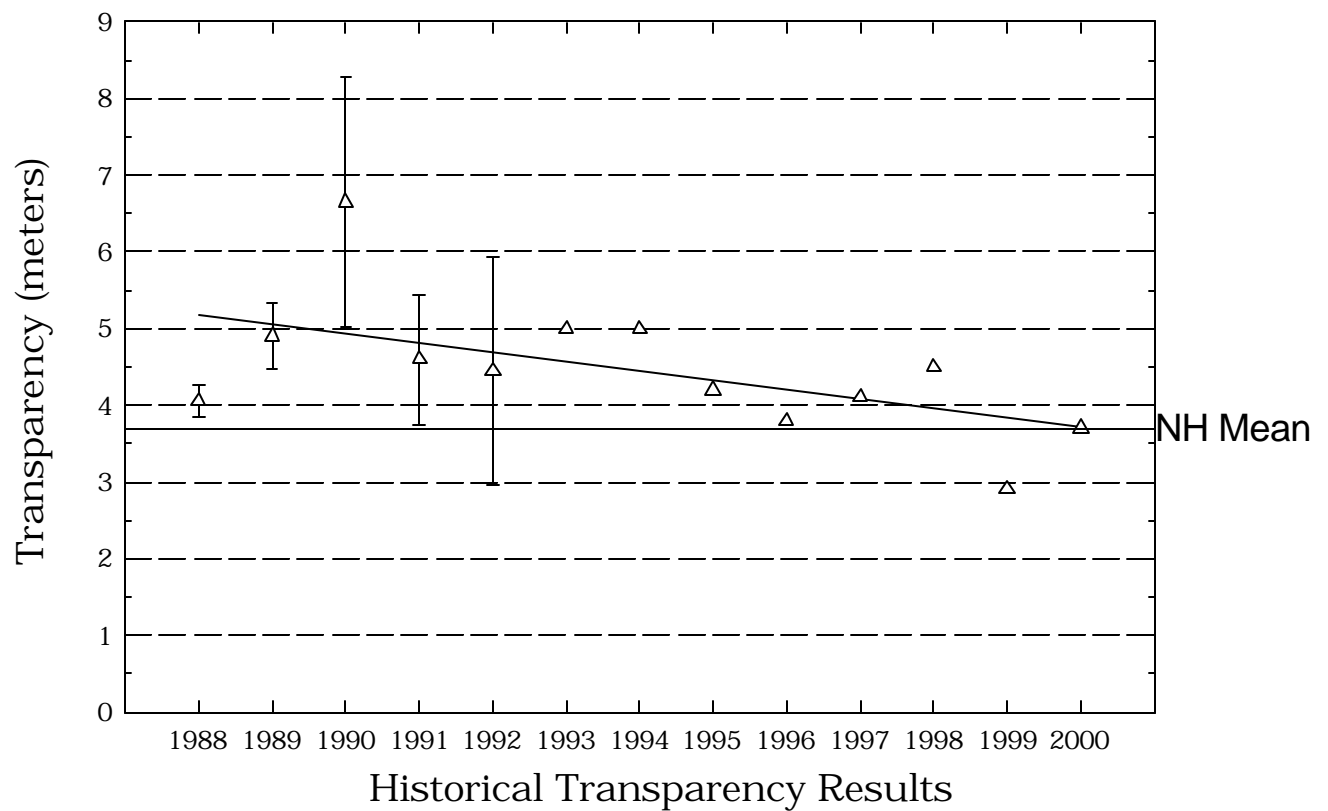
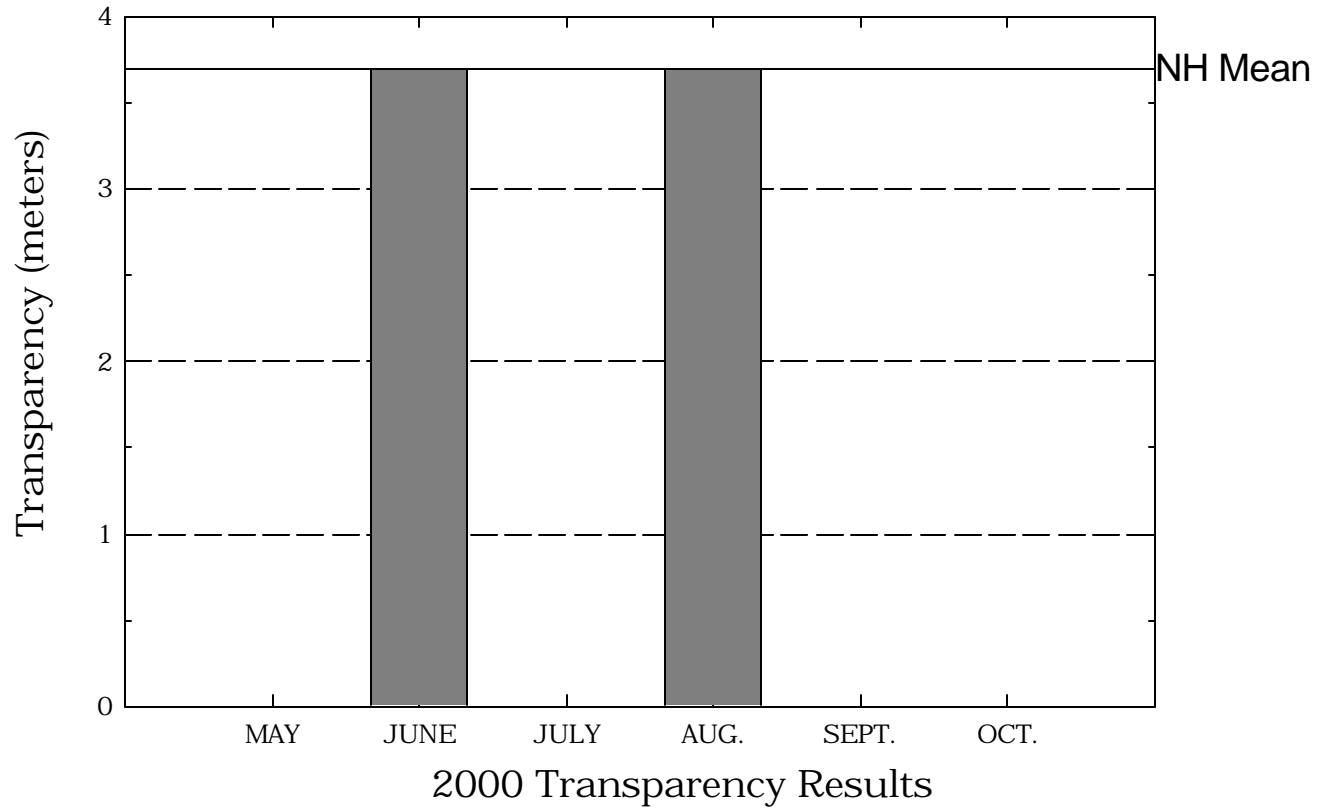
# Cobbetts Pond, Station 1

**Figure 1.** Monthly and Historical Chlorophyll-a Results



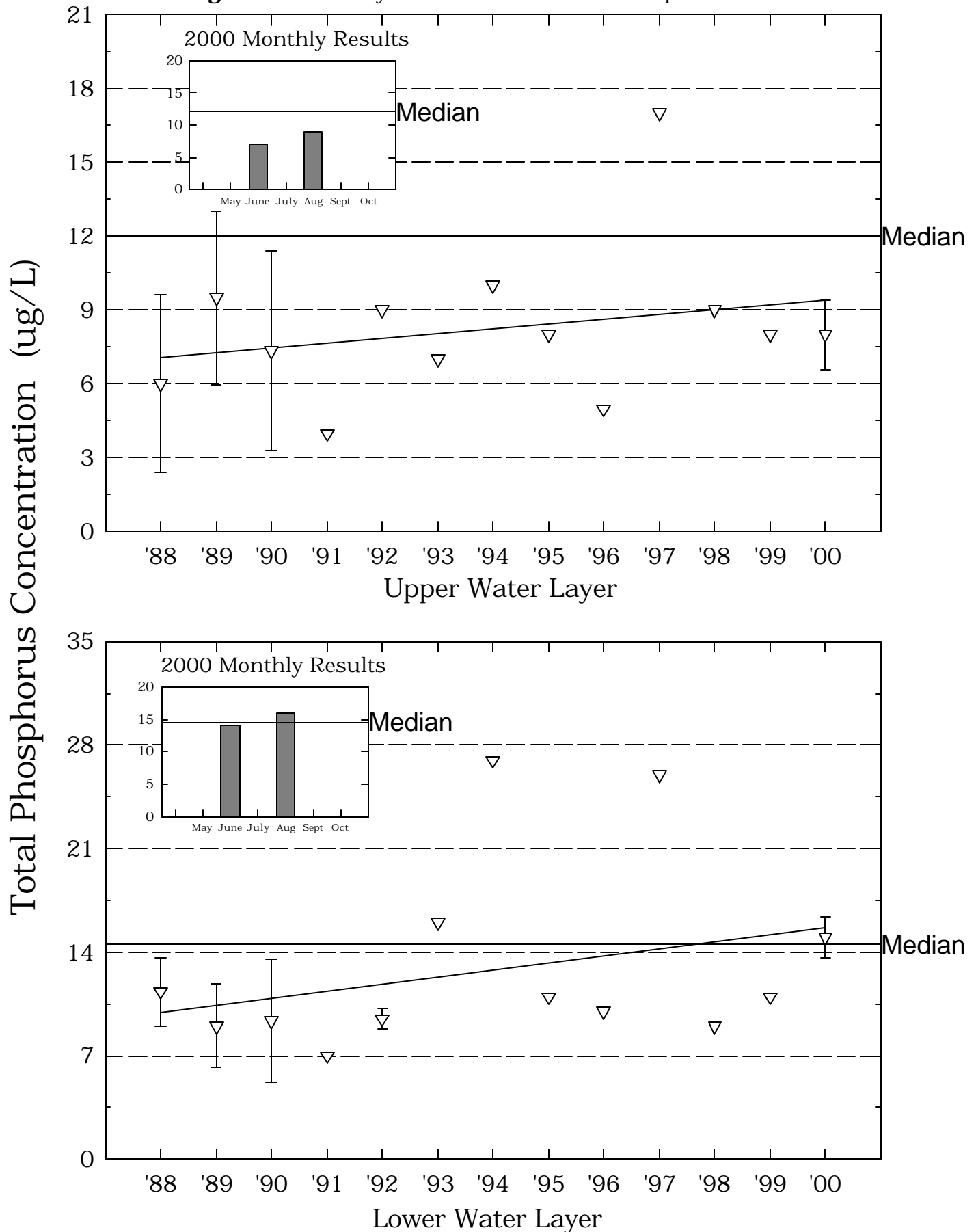
# Cobbetts Pond, Station 1

**Figure 2.** Monthly and Historical Transparency Results



# Cobbetts Pond, Station 1

**Figure 3.** Monthly and Historical Total Phosphorus Data.



**Table 1.****COBBETTS POND, STN 1****WINDHAM**

**Chlorophyll-a results (mg/m<sup>3</sup>) for current year and historical  
sampling periods.**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	2.29	3.90	3.33
1989	2.18	2.75	2.46
1990	2.73	3.46	3.04
1991	2.56	2.56	2.56
1992	2.72	3.79	3.25
1993	2.99	2.99	2.99
1994	2.89	2.89	2.89
1995	4.36	4.36	4.36
1996	5.64	5.64	5.64
1997	1.64	1.64	1.64
1998	6.40	6.40	6.40
1999	4.93	4.93	4.93
2000	3.13	4.03	3.58

**Table 2.****COBBETTS POND, STN 1****WINDHAM****Phytoplankton species and relative percent abundance.****Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
06/14/1988	ASTERIONELLA	63
	SYNEDRA	17
07/07/1989	DINOBRYON	91
	ASTERIONELLA	
07/13/1990	DINOBRYON	75
	ASTERIONELLA	22
06/11/1991	ASTERIONELLA	73
	DINOBRYON	18
	CERATUM	6
07/13/1992	DINOBRYON	98
	ASTERIONELLA	1
08/23/1993	DINOBRYON	59
	CERATUM	21
08/08/1994	CERATUM	59
	DINOBRYON	37
07/12/1995	ASTERIONELLA	61
	CERATUM	35
	ANABAENA	2
07/15/1996	DINOBRYON	59
	TABELLARIA	5
	FRAGILARIA	3
07/18/1997	DINOBRYON	56
	SYNURA	30
	FRAGILARIA	5
06/24/1998	DINOBRYON	94
	SYNURA	4
	CERATUM	1

**Table 2.**

**COBBETTS POND, STN 1**

**WINDHAM**

**Phytoplankton species and relative percent abundance.**

**Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
07/29/1999	TABELLARIA	37
	DINOBYRON	35
	OSCILLATORIA	15
06/22/2000	OSCILLATORIA	81
	CERATIUM	7
	TABELLARIA	5

**Table 3.****COBBETTS POND, STN 1  
WINDHAM****Summary of current and historical Secchi Disk  
transparency results (in meters).**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	3.9	4.2	4.0
1989	4.6	5.2	4.9
1990	5.5	7.8	6.6
1991	4.0	5.2	4.6
1992	3.4	5.5	4.4
1993	5.0	5.0	5.0
1994	5.0	5.0	5.0
1995	4.2	4.2	4.2
1996	3.8	3.8	3.8
1997	4.1	4.1	4.1
1998	4.5	4.5	4.5
1999	2.9	2.9	2.9
2000	3.7	3.7	3.7

**Table 4.****COBBETTS POND, STN 1****WINDHAM****pH summary for current and historical sampling seasons.****Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
CONNIE'S BROOK UPSTM				
	1998	6.99	6.99	6.99
CONNIE'S BROOK				
	1988	6.88	6.88	6.88
	1989	7.33	7.33	7.33
	1990	7.17	7.17	7.17
	1991	7.07	7.09	7.08
	1992	7.10	7.43	7.23
	1996	6.90	6.90	6.90
	1997	7.07	7.07	7.07
	1998	6.72	6.72	6.72
	2000	7.12	7.12	7.12
DAM				
	1991	7.20	7.20	7.20
DINSMORE BROOK				
	1988	6.92	7.22	7.04
	1989	7.20	7.20	7.20
	1990	7.22	7.26	7.24
	1991	6.98	6.98	6.98
	1992	6.93	7.22	7.05
	1995	6.78	6.78	6.78
	1996	6.83	6.83	6.83
	1997	7.17	7.17	7.17
	1998	6.78	6.78	6.78
	2000	6.92	6.92	6.92

**Table 4.****COBBETTS POND, STN 1  
WINDHAM****pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1988	6.95	7.30	7.15
	1989	7.38	7.44	7.41
	1990	7.51	7.57	7.53
	1991	7.00	7.37	7.15
	1992	7.20	7.71	7.38
	1993	7.57	7.57	7.57
	1994	7.55	7.55	7.55
	1995	7.33	7.33	7.33
	1996	7.24	7.24	7.24
	1997	7.57	7.57	7.57
	1998	7.37	7.37	7.37
	1999	7.53	7.53	7.53
	2000	7.23	7.25	7.24
FOSSA RD INLET	1998	7.03	7.03	7.03
HYPOLIMNION	1988	6.57	6.72	6.64
	1989	6.60	6.64	6.62
	1990	6.55	6.76	6.66
	1991	6.50	6.85	6.64
	1992	6.95	6.98	6.96
	1993	6.64	6.64	6.64
	1994	6.71	6.71	6.71
	1995	6.68	6.68	6.68
	1996	6.48	6.48	6.48

**Table 4.**

**COBBETTS POND, STN 1  
WINDHAM**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
MAIN INLET ABOVE DD	1997	6.88	6.88	6.88
	1998	6.65	6.65	6.65
	1999	6.88	6.88	6.88
	2000	6.78	6.87	6.82
MAIN INLET BELOW DD	1995	7.19	7.19	7.19
	1998	6.84	6.84	6.84
MAIN INLET	1988	6.60	6.83	6.70
	1989	7.00	7.00	7.00
	1990	6.68	6.98	6.81
	1991	6.80	7.05	6.91
	1992	6.80	6.97	6.88
	1993	7.61	7.61	7.61
	1994	6.74	6.74	6.74
	1995	6.68	6.94	6.79
	1996	6.73	6.73	6.73
	1997	7.05	7.05	7.05
	1998	6.77	6.77	6.77
	1999	6.56	6.56	6.56
	2000	6.83	6.83	6.83
	1988	6.85	7.22	6.98
METALIMNION				

**Table 4.****COBBETTS POND, STN 1  
WINDHAM**

**pH summary for current and historical sampling seasons.  
Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1989	7.16	7.24	7.20
	1990	6.79	7.31	7.05
	1991	6.72	7.08	6.86
	1992	7.10	7.53	7.26
	1993	7.09	7.09	7.09
	1994	7.13	7.13	7.13
	1995	7.14	7.14	7.14
	1996	6.75	6.75	6.75
	1997	7.10	7.10	7.10
	1998	6.90	6.90	6.90
	1999	6.84	6.84	6.84
	2000	7.06	7.10	7.08
OUTLET	1988	7.29	7.29	7.29
	1989	7.62	7.63	7.63
	1990	7.40	7.76	7.49
	1991	7.51	7.51	7.51
	1992	7.31	7.59	7.43
	1993	7.55	7.55	7.55
	1994	7.26	7.26	7.26
	1995	7.26	7.26	7.26
	1996	7.17	7.17	7.17
	1997	7.51	7.51	7.51
	1999	7.87	7.87	7.87
	2000	7.32	7.37	7.34

**Table 5.****COBBETTS POND, STN 1****WINDHAM****Summary of current and historical Acid Neutralizing Capacity.****Values expressed in mg/L as CaCO<sub>3</sub>.****Epilimnetic Values**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	18.30	18.90	18.60
1989	18.00	19.30	18.65
1990	20.30	20.50	20.37
1991	18.40	24.90	21.65
1992	20.40	47.50	33.95
1993	20.30	20.30	20.30
1994	21.50	21.50	21.50
1995	22.10	22.10	22.10
1996	20.30	20.30	20.30
1997	20.10	20.10	20.10
1998	18.60	18.60	18.60
1999	18.70	18.70	18.70
2000	21.00	22.60	21.80

**Table 6.**

**COBBETTS POND, STN 1  
WINDHAM**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
CONNIE'S BROOK UPSTM				
	1998	188.2	188.2	188.2
CONNIE'S BROOK				
	1988	302.9	302.9	302.9
	1989	633.0	633.0	633.0
	1990	469.0	469.0	469.0
	1991	365.7	467.6	416.6
	1992	368.0	444.0	406.0
	1996	398.0	398.0	398.0
	1997	511.0	511.0	511.0
	1998	136.7	136.7	136.7
	2000	285.0	285.0	285.0
DAM				
	1991	268.8	268.8	268.8
DINSMORE BROOK				
	1988	474.0	504.0	489.0
	1989	459.0	459.0	459.0
	1990	429.0	519.4	474.2
	1991	497.5	497.5	497.5
	1992	337.9	395.0	366.4
	1995	427.0	427.0	427.0
	1996	433.0	433.0	433.0
	1997	481.0	481.0	481.0
	1998	263.1	263.1	263.1
	2000	369.0	369.0	369.0

**Table 6.**

**COBBETTS POND, STN 1  
WINDHAM**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1988	244.8	247.0	245.9
	1989	251.0	260.0	255.5
	1990	251.8	276.0	267.5
	1991	264.1	271.6	267.8
	1992	258.0	262.2	260.1
	1993	276.0	276.0	276.0
	1994	288.0	288.0	288.0
	1995	284.0	284.0	284.0
	1996	293.0	293.0	293.0
	1997	285.0	285.0	285.0
	1998	248.3	248.3	248.3
	1999	298.9	298.9	298.9
	2000	300.0	305.0	302.5
FOSSA RD INLET	1998	296.0	296.0	296.0
HYPOLIMNION	1988	241.4	247.0	243.8
	1989	246.0	250.0	248.0
	1990	261.1	270.0	266.6
	1991	268.8	268.9	268.8
	1992	255.0	258.0	256.5
	1993	268.0	268.0	268.0
	1994	290.0	290.0	290.0
	1995	273.0	273.0	273.0
	1996	284.0	284.0	284.0

Table 6.

**COBBETTS POND, STN 1  
WINDHAM**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1997	284.0	284.0	284.0
	1998	284.5	284.5	284.5
	1999	294.8	294.8	294.8
	2000	312.0	316.0	314.0
MAIN INLET ABOVE DD				
	1995	429.0	429.0	429.0
MAIN INLET BELOW DD				
	1995	433.0	433.0	433.0
	1998	341.0	341.0	341.0
MAIN INLET				
	1988	432.5	577.0	504.7
	1989	657.0	657.0	657.0
	1990	479.0	760.3	617.7
	1991	490.2	628.2	559.2
	1992	518.9	681.0	599.9
	1993	1082.0	1082.0	1082.0
	1994	865.0	865.0	865.0
	1995	473.0	900.0	686.5
	1996	490.0	490.0	490.0
	1997	804.0	804.0	804.0
	1998	343.7	343.7	343.7
	1999	1142.4	1142.4	1142.4
	2000	481.0	481.0	481.0
METALIMNION				
	1988	240.7	242.0	241.2
	1989	249.0	254.0	251.5

**Table 6.**

**COBBETTS POND, STN 1  
WINDHAM**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1990	263.2	268.9	266.5
	1991	265.9	269.3	267.6
	1992	257.4	259.0	258.2
	1993	260.0	260.0	260.0
	1994	276.0	276.0	276.0
	1995	275.0	275.0	275.0
	1996	280.0	280.0	280.0
	1997	279.0	279.0	279.0
	1998	271.3	271.3	271.3
	1999	290.0	290.0	290.0
	2000	303.0	303.0	303.0
OUTLET	1988	245.4	245.4	245.4
	1989	257.0	258.0	257.3
	1990	267.0	279.0	273.1
	1991	275.8	275.8	275.8
	1992	259.4	263.0	261.2
	1993	284.0	284.0	284.0
	1994	288.0	288.0	288.0
	1995	289.0	289.0	289.0
	1996	288.0	288.0	288.0
	1997	290.0	290.0	290.0
	1999	302.0	302.0	302.0
	2000	298.0	304.0	301.0

**Table 8.**

**COBBETTS POND, STN 1**

**WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
CONNIE'S BROOK UPSTM				
	1998	9	9	9
CONNIE'S BROOK				
	1988	9	9	9
	1989	6	6	6
	1990	8	21	14
	1991	9	9	9
	1992	11	14	12
	1996	15	15	15
	1997	20	34	27
	1998	8	8	8
	2000	11	11	11
DINSMORE BROOK				
	1988	11	27	19
	1989	9	9	9
	1990	9	10	9
	1991	16	16	16
	1992	14	45	29
	1995	20	20	20
	1996	4	4	4
	1997	10	12	11
	1998	9	9	9
	2000	< 5	5	5
EPILIMNION				
	1988	3	10	6
	1989	7	12	9

**Table 8.****COBBETTS POND, STN 1****WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1990	5	12	7
	1991	4	4	4
	1992	9	9	9
	1993	7	7	7
	1994	10	10	10
	1995	8	8	8
	1996	5	5	5
	1997	17	17	17
	1998	9	9	9
	1999	8	8	8
	2000	7	9	8
FOSSA RD INLET				
	1998	15	15	15
HYPOLIMNION				
	1988	10	14	11
	1989	7	11	9
	1990	6	14	9
	1991	7	7	7
	1992	9	10	9
	1993	16	16	16
	1994	27	27	27
	1995	11	11	11
	1996	10	10	10
	1997	26	26	26
	1998	9	9	9
	1999	11	11	11
	2000	14	16	15

**Table 8.**

**COBBETTS POND, STN 1**

**WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
MAIN INLET ABOVE DD				
	1995	6	6	6
MAIN INLET BELOW DD				
	1995	3	3	3
	1997	26	26	26
	1998	8	8	8
MAIN INLET BY LAGOON				
	1997	16	16	16
MAIN INLET				
	1988	14	34	24
	1989	12	12	12
	1990	15	25	21
	1991	9	9	9
	1992	10	10	10
	1993	16	16	16
	1994	27	27	27
	1995	6	15	10
	1996	10	10	10
	1997	< 24	24	22
	1998	9	9	9
	1999	37	37	37
	2000	< 5	5	5
METALIMNION				
	1988	3	10	5
	1989	7	11	9
	1990	7	20	11

**Table 8.****COBBETTS POND, STN 1****WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1991	4	4	4
	1992	8	10	9
	1993	8	8	8
	1994	14	14	14
	1995	10	10	10
	1996	8	8	8
	1997	20	20	20
	1998	8	8	8
	1999	12	12	12
	2000	13	20	16
OUTLET	1988	< 1	1	1
	1989	1	5	3
	1990	3	9	5
	1991	4	4	4
	1992	7	24	15
	1993	7	7	7
	1994	20	20	20
	1995	8	8	8
	1996	8	8	8
	1997	11	15	13
	1999	12	12	12
	2000	9	15	12

**Table 10.****COBBETTS POND, STN 1  
WINDHAM****Historic Hypolimnetic dissolved oxygen and temperature data.**

<b>Date</b>	<b>Depth</b> (meters)	<b>Temperature</b> (celsius)	<b>Dissolved Oxygen</b> (mg/L)	<b>Saturation</b> (%)
June 14, 1988	15.0	8.1	2.0	7.0
July 7, 1989	18.0	5.0	3.8	29.0
July 13, 1990	17.0	8.0	4.8	40.4
June 11, 1991	11.0	9.2	8.9	77.1
July 13, 1992	18.5	8.0	3.5	29.4
August 23, 1993	19.0	7.0	0.3	2.0
August 8, 1994	18.0	6.5	0.3	2.0
July 12, 1995	18.0	6.0	0.5	4.0
July 15, 1996	18.5	7.0	1.6	13.0
July 18, 1997	16.0	8.1	0.6	5.0
June 24, 1998	19.0	8.3	1.4	12.0
July 29, 1999	17.5	8.7	0.9	7.0
July 29, 1999	17.5	8.6	0.9	7.3

**Table 11.**

**COBBETTS POND, STN 1  
WINDHAM**

**Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
CONNIE'S BROOK UPSTM				
	1998	0.3	0.3	0.3
CONNIE'S BROOK				
	1997	0.4	0.4	0.4
	1998	0.3	0.3	0.3
	2000	0.4	0.4	0.4
DINSMORE BROOK				
	1997	1.9	1.9	1.9
	1998	0.5	0.5	0.5
	2000	0.4	0.4	0.4
EPILIMNION				
	1997	0.4	0.4	0.4
	1998	0.4	0.4	0.4
	1999	0.8	0.8	0.8
	2000	0.3	0.4	0.4
FOSSA RD INLET				
	1998	0.5	0.5	0.5
HYPOLIMNION				
	1997	0.6	0.6	0.6
	1998	0.5	0.5	0.5
	1999	0.6	0.6	0.6
	2000	0.8	4.5	2.6
MAIN INLET BELOW DD				
	1998	1.5	1.5	1.5
MAIN INLET				
	1997	11.6	11.6	11.6

**Table 11.**

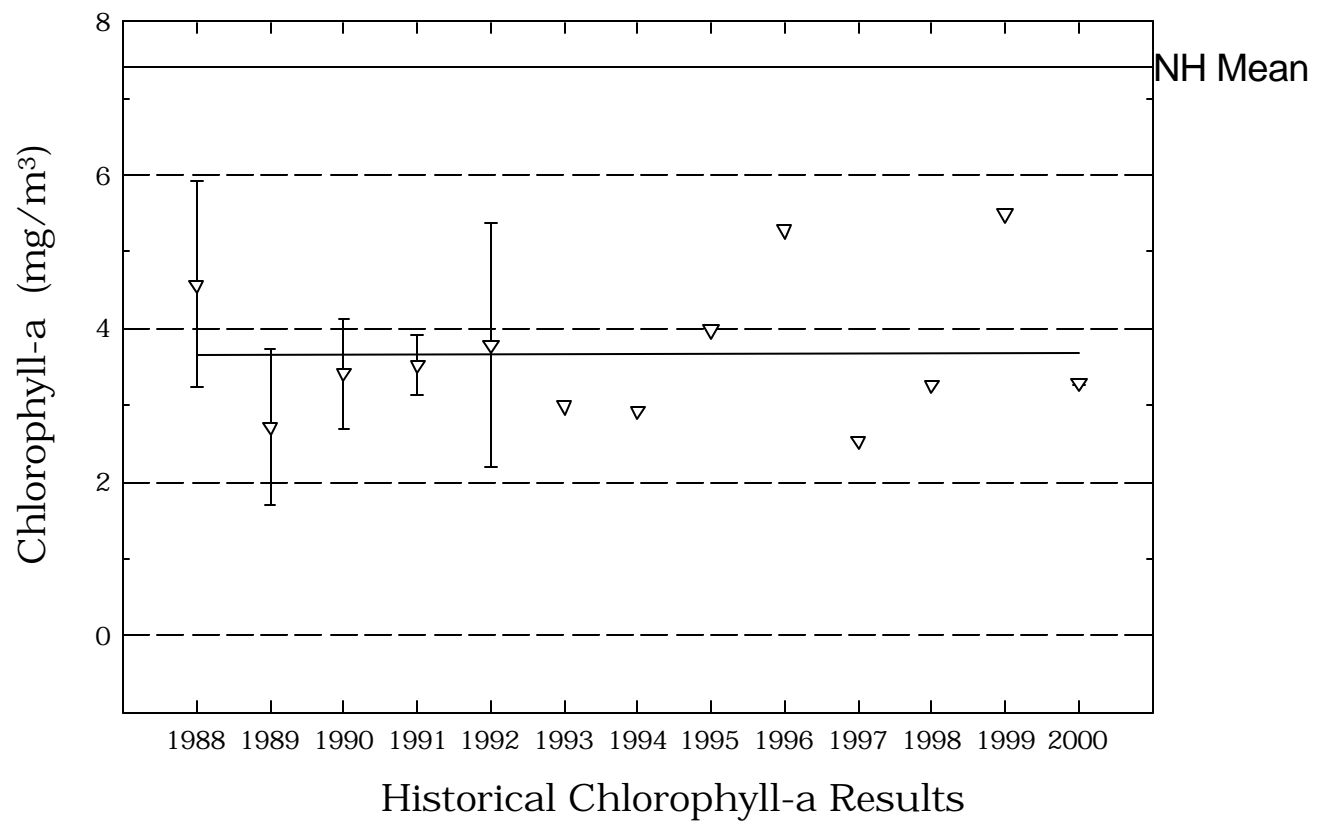
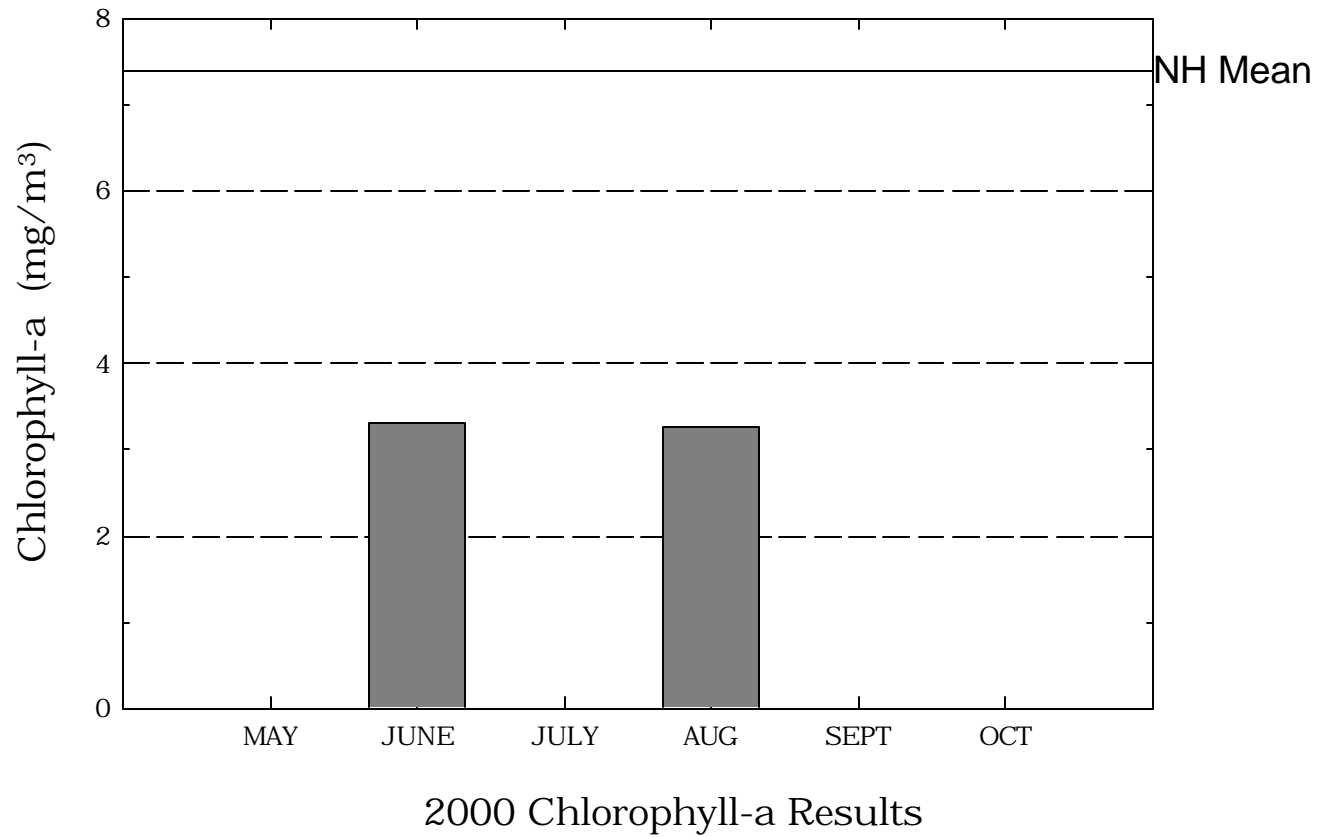
**COBBETTS POND, STN 1  
WINDHAM**

**Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1998	1.2	1.2	1.2
	1999	13.0	13.0	13.0
	2000	1.9	1.9	1.9
METALIMNION				
	1997	0.4	0.4	0.4
	1998	0.6	0.6	0.6
	1999	1.3	1.3	1.3
	2000	0.8	4.4	2.6
OUTLET				
	1997	0.4	0.4	0.4
	1999	0.8	0.8	0.8
	2000	0.5	1.1	0.8

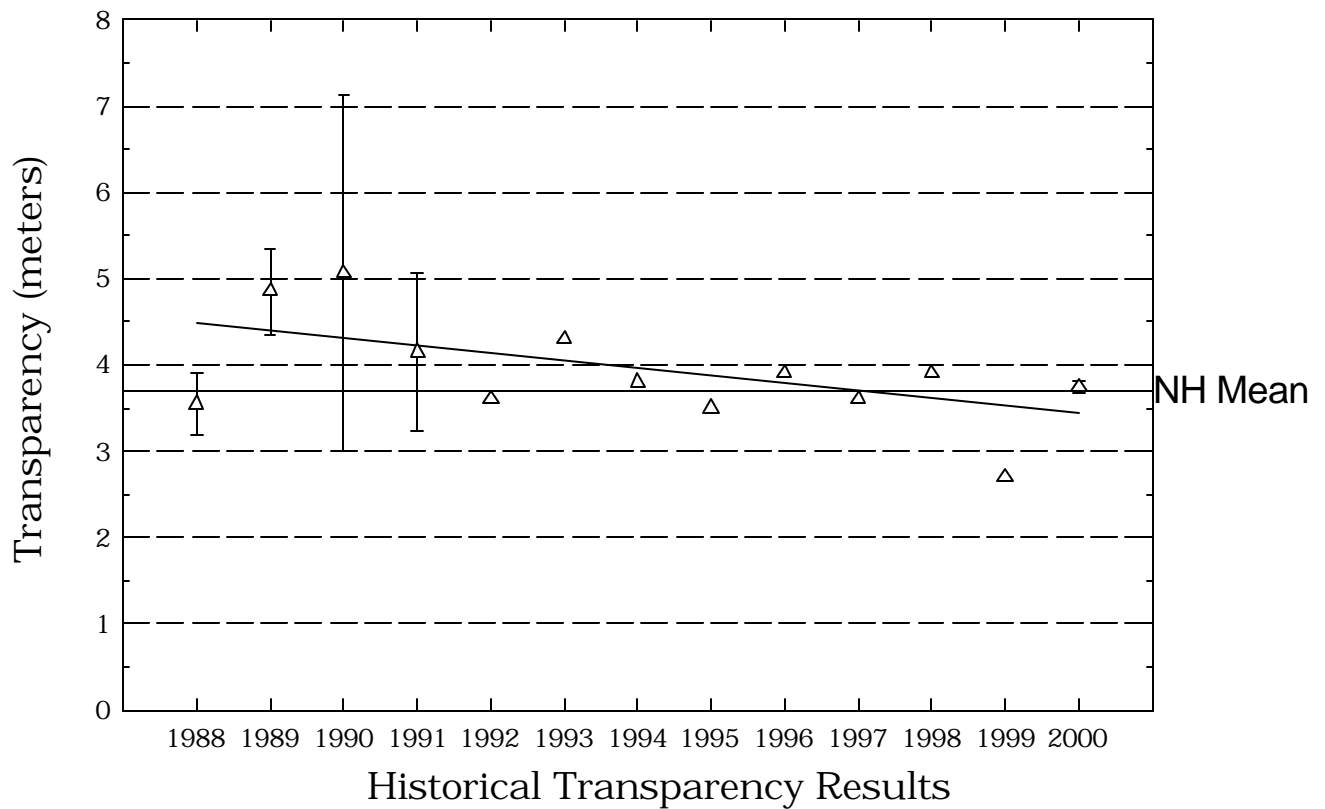
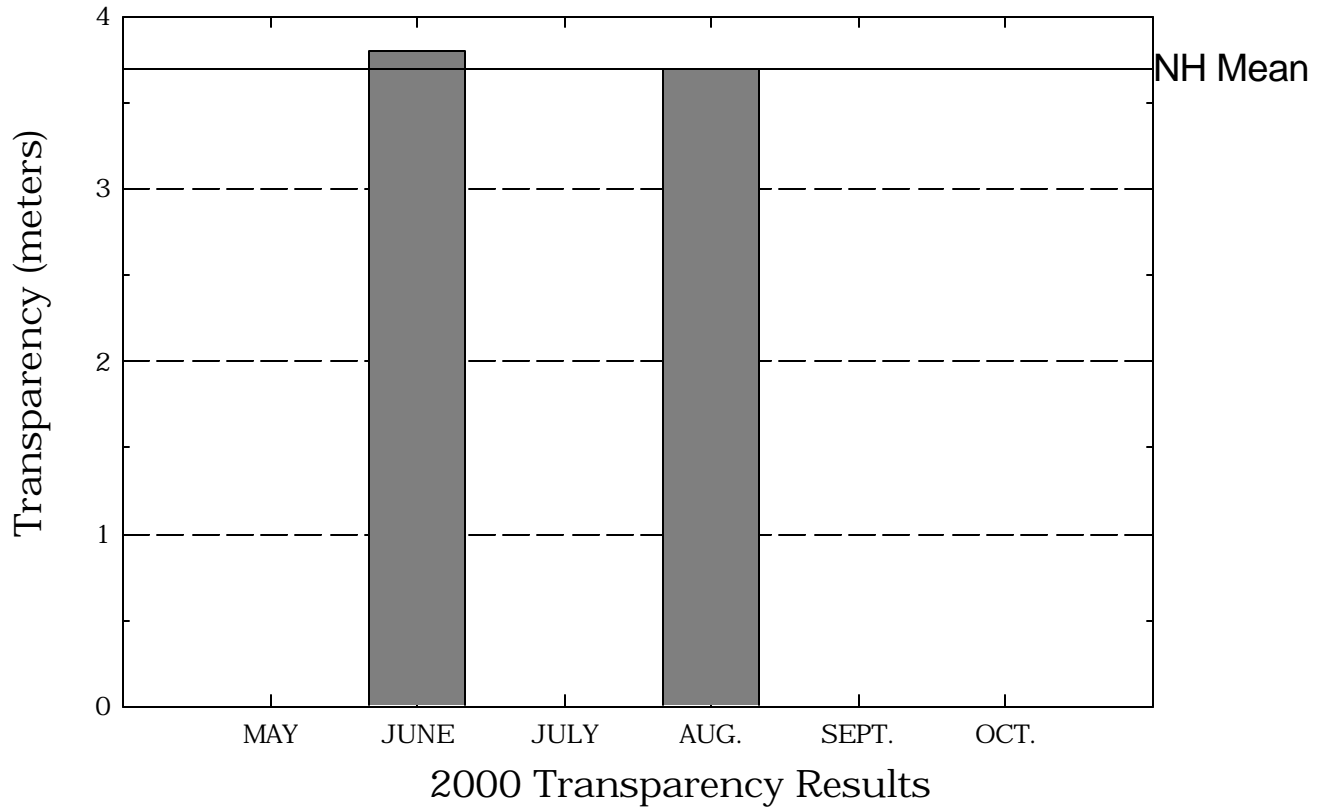
# Cobbetts Pond, Station 2

**Figure 1.** Monthly and Historical Chlorophyll-a Results



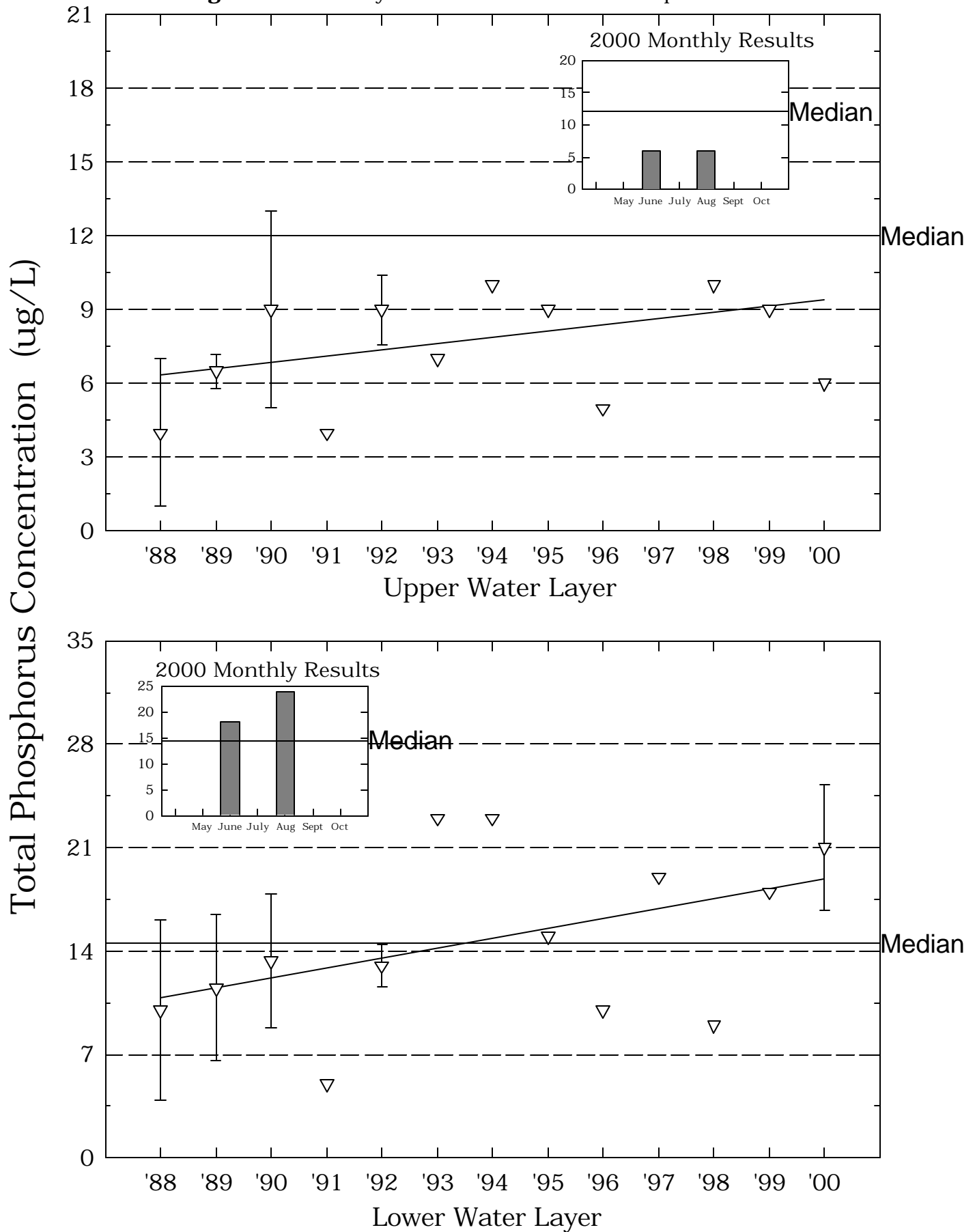
# Cobbetts Pond, Station 2

**Figure 2.** Monthly and Historical Transparency Results



# Cobbetts Pond, Station 2

**Figure 3.** Monthly and Historical Total Phosphorus Data.



**Table 1.****COBBETTS POND, STN 2****WINDHAM**

**Chlorophyll-a results (mg/m<sup>3</sup>) for current year and historical  
sampling periods.**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	3.03	5.41	4.57
1989	1.99	3.44	2.71
1990	2.63	4.03	3.42
1991	3.25	3.81	3.53
1992	2.67	4.91	3.79
1993	2.99	2.99	2.99
1994	2.92	2.92	2.92
1995	3.98	3.98	3.98
1996	5.29	5.29	5.29
1997	2.54	2.54	2.54
1998	3.27	3.27	3.27
1999	5.50	5.50	5.50
2000	3.27	3.32	3.29

**Table 2.****COBBETTS POND, STN 2****WINDHAM****Phytoplankton species and relative percent abundance.****Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
06/14/1988	SYNEDRA	44
	ASTERIONELLA	40
07/07/1989	DINOBRYON	83
	ASTERIONELLA	
	TABELLARIA	
07/13/1990	DINOBRYON	81
06/11/1991	ASTERIONELLA	70
	DINOBRYON	23
	CERATIUM	4
07/13/1992	DINOBRYON	96
	ASTERIONELLA	1
08/23/1993	CERATIUM	41
	DINOBRYON	34
08/08/1994	CERATIUM	50
	DINOBRYON	34
07/12/1995	ASTERIONELLA	69
	CERATIUM	30
	MALLOMONAS	1
07/15/1996	DINOBRYON	71
	CERATIUM	15
	ANABAENA	4
07/18/1997	DINOBRYON	59
	CERATIUM	4
	SYNURA	1
06/24/1998	DINOBRYON	64
	SYNURA	29
	SYNEDRA	2

**Table 2.**

**COBBETTS POND, STN 2**

**WINDHAM**

**Phytoplankton species and relative percent abundance.**

**Summary for current and historical sampling seasons.**

<b>Date of Sample</b>	<b>Species Observed</b>	<b>Relative % Abundance</b>
07/29/1999	DINOBRYON	42
	TABELLARIA	25
	OSCILLATORIA	24
06/22/2000	OSCILLATORIA	83
	TABELLARIA	5
	PEDIASTRUM	4

**Table 3.****COBBETTS POND, STN 2****WINDHAM**

**Summary of current and historical Secchi Disk  
transparency results (in meters).**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	3.3	3.8	3.5
1989	4.5	5.2	4.8
1990	3.5	7.4	5.0
1991	3.5	4.8	4.1
1992	3.6	3.6	3.6
1993	4.3	4.3	4.3
1994	3.8	3.8	3.8
1995	3.5	3.5	3.5
1996	3.9	3.9	3.9
1997	3.6	3.6	3.6
1998	3.9	3.9	3.9
1999	2.7	2.7	2.7
2000	3.7	3.8	3.7

**Table 4.****COBBETTS POND, STN 2****WINDHAM****pH summary for current and historical sampling seasons.****Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1988	6.87	7.29	7.09
	1989	7.38	7.44	7.41
	1990	7.37	7.46	7.41
	1991	7.38	7.53	7.45
	1992	7.16	7.54	7.31
	1993	7.60	7.60	7.60
	1994	7.45	7.45	7.45
	1995	7.49	7.49	7.49
	1996	7.30	7.30	7.30
	1997	7.05	7.05	7.05
	1998	7.45	7.45	7.45
	1999	7.36	7.36	7.36
	2000	7.37	7.41	7.39
HYPOLIMNION	1988	6.51	6.93	6.61
	1989	6.59	6.60	6.60
	1990	6.61	6.78	6.68
	1991	6.56	6.75	6.64
	1992	6.91	7.00	6.95
	1993	6.66	6.66	6.66
	1994	6.69	6.69	6.69
	1995	6.66	6.66	6.66
	1996	6.47	6.47	6.47
	1997	6.78	6.78	6.78
	1998	6.62	6.62	6.62
	2000	6.80	6.87	6.83

**Table 4.****COBBETTS POND, STN 2****WINDHAM**

**pH summary for current and historical sampling seasons.**  
**Values in units, listed by station and year.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
METALIMNION	1988	6.77	7.13	6.92
	1989	6.93	7.21	7.05
	1990	6.98	7.22	7.08
	1991	6.51	6.86	6.65
	1992	7.22	7.55	7.35
	1993	6.96	6.96	6.96
	1994	6.88	6.88	6.88
	1995	7.28	7.28	7.28
	1996	6.99	6.99	6.99
	1997	6.86	6.86	6.86
	1998	0.83	0.83	0.83
	1999	6.77	6.77	6.77
	2000	6.84	7.03	6.92

**Table 5.****COBBETTS POND, STN 2****WINDHAM****Summary of current and historical Acid Neutralizing Capacity.****Values expressed in mg/L as CaCO<sub>3</sub>.****Epilimnetic Values**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
1988	18.80	19.50	19.15
1989	18.70	20.00	19.35
1990	19.30	20.90	20.10
1991	19.40	24.70	22.05
1992	22.70	22.70	22.70
1993	21.30	21.30	21.30
1994	22.20	22.20	22.20
1995	22.10	22.10	22.10
1996	20.20	20.20	20.20
1997	20.00	20.00	20.00
1998	18.10	18.10	18.10
1999	16.50	16.50	16.50
2000	21.80	22.10	21.95

**Table 6.**

**COBBETTS POND, STN 2  
WINDHAM**

**Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1988	245.0	249.0	247.3
	1989	257.0	260.0	258.5
	1990	274.7	278.7	276.3
	1991	260.4	274.5	267.4
	1992	264.0	266.0	265.0
	1993	275.0	275.0	275.0
	1994	291.0	291.0	291.0
	1995	290.0	290.0	290.0
	1996	291.0	291.0	291.0
	1997	289.0	289.0	289.0
	1998	252.0	252.0	252.0
	1999	307.0	307.0	307.0
	2000	302.0	303.0	302.5
HYPOLIMNION	1988	255.0	342.7	310.9
	1989	270.0	273.0	271.5
	1990	277.4	284.0	281.4
	1991	274.6	274.8	274.7
	1992	270.7	273.0	271.8
	1993	421.0	421.0	421.0
	1994	440.0	440.0	440.0
	1995	293.0	293.0	293.0
	1996	323.0	323.0	323.0
	1997	309.0	309.0	309.0
	1998	279.4	279.4	279.4

**Table 6.****COBBETTS POND, STN 2  
WINDHAM****Specific conductance results from current and historic  
sampling seasons. Results in uMhos/cm.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1999	313.1	313.1	313.1
	2000	347.0	354.0	350.5
METALIMNION				
	1988	247.0	253.0	250.6
	1989	261.0	262.0	261.5
	1990	274.4	289.9	280.5
	1991	244.6	271.9	258.2
	1992	265.0	267.7	266.3
	1993	276.0	276.0	276.0
	1994	288.0	288.0	288.0
	1995	283.0	283.0	283.0
	1996	294.0	294.0	294.0
	1997	292.0	292.0	292.0
	1998	270.0	270.0	270.0
	1999	300.0	300.0	300.0
	2000	304.0	306.0	305.0

**Table 8.****COBBETTS POND, STN 2****WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1988	< 1	7	4
	1989	6	7	6
	1990	5	13	9
	1991	4	4	4
	1992	8	10	9
	1993	7	7	7
	1994	10	10	10
	1995	9	9	9
	1996	5	5	5
	1997	16	16	16
	1998	10	10	10
	1999	9	9	9
	2000	6	6	6
HYPOLIMNION	1988	6	17	10
	1989	8	15	11
	1990	9	18	13
	1991	5	5	5
	1992	12	14	13
	1993	23	23	23
	1994	23	23	23
	1995	15	15	15
	1996	10	10	10
	1997	19	19	19
	1998	9	9	9

**Table 8.**

**COBBETTS POND, STN 2**

**WINDHAM**

**Summary historical and current sampling season Total  
Phosphorus data. Results in ug/L.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
	1999	18	18	18
	2000	18	24	21
METALIMNION	1988	< 1	8	5
	1989	7	11	9
	1990	7	21	13
	1991	5	5	5
	1992	9	11	10
	1993	7	7	7
	1994	7	7	7
	1995	11	11	11
	1996	7	7	7
	1997	17	17	17
	1998	9	9	9
	1999	7	7	7
	2000	10	18	14

**Table 9.**  
**COBBETTS POND, STN 2**  
**WINDHAM**

**Current year dissolved oxygen and temperature data.**

<b>Depth</b> (meters)	<b>Temperature</b> (celsius)	<b>Dissolved Oxygen</b> (mg/L)	<b>Saturation</b> (%)
<b>June 22, 2000</b>			
3.0	22.5	8.3	94.0
4.0	22.0	8.3	94.0
5.0	19.6	8.5	90.0
6.0	15.8	7.8	76.0
7.0	12.5	9.4	87.0
8.0	11.4	9.4	85.0
9.0	9.9	4.9	42.0
10.0	9.1	1.7	14.0
11.0	8.4	0.3	2.0
12.0	8.2	0.3	2.0
13.0	7.7	0.3	3.0
14.0	7.1	0.3	2.0
15.0	6.9	0.4	3.0
16.0	7.0	0.6	4.0

**Table 10.****COBBETTS POND, STN 2  
WINDHAM****Historic Hypolimnetic dissolved oxygen and temperature data.**

<b>Date</b>	<b>Depth</b> (meters)	<b>Temperature</b> (celsius)	<b>Dissolved Oxygen</b> (mg/L)	<b>Saturation</b> (%)
June 14, 1988	15.0	4.9	0.0	0.0
July 7, 1989	15.0	4.0	4.1	31.0
July 13, 1990	13.0	7.4	0.7	5.8
June 11, 1991	9.0	9.7	10.0	87.7
August 8, 1994	15.0	4.7	0.4	3.0
July 12, 1995	14.0	5.8	0.4	3.0
July 15, 1996	14.0	6.6	0.4	3.0
July 18, 1997	14.0	6.2	0.5	4.0
June 24, 1998	13.0	7.0	1.2	10.0
June 22, 2000	16.0	7.0	0.6	4.0

**Table 11.****COBBETTS POND, STN 2  
WINDHAM****Summary of current year and historic turbidity sampling.  
Results in NTU's.**

<b>Station</b>	<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>
EPILIMNION	1997	0.5	0.5	0.5
	1998	0.4	0.4	0.4
	1999	0.8	0.8	0.8
	2000	0.4	0.4	0.4
HYPOLIMNION	1997	1.3	1.3	1.3
	1998	0.6	0.6	0.6
	1999	1.9	1.9	1.9
	2000	3.3	8.7	6.0
METALIMNION	1997	0.7	0.7	0.7
	1998	0.5	0.5	0.5
	1999	1.2	1.2	1.2
	2000	0.9	6.3	3.6